

System Configuration Team (SCT)

Special Studies Review Work Group Meeting

to Discuss 1999 Study Plans at The Dalles and John Day Dams

Reasonable & Prudent Measure #26
Meeting Notes
February 23, 1999

DRAFT

I. Greetings and Introductions.

The February 23 meeting of the System Configuration Team, to develop study plans for The Dalles and John Day Dams in 1999, was held at the National Marine Fisheries Service offices in Portland, Oregon. The meeting was facilitated by Donna Silverberg. The agenda and a list of attendees for the February 23 meeting are attached as Enclosures A and B.

The following is a distillation (not a verbatim transcript) of items discussed at the meeting, together with actions taken on those items. Please note that some enclosures referenced may be too lengthy to routinely include with the meeting notes; copies of all enclosures referred to in the minutes are available upon request from Kathy Ceballos of NMFS at 503/230-5420.

Silverberg explained that the purpose of today's meeting is to address, and hopefully develop some concrete recommendations, on the not-uncontentious issue of the study design for the spill tests at The Dalles and John Day Dams in 1999. She provided the following list of proposed discussion items:

- What are the goals of the study?
- How should the study be conducted (i.e.: reach survival, or survival through various routes of passage?)
- What is the necessary and acceptable level of precision needed in the study results, and how can it be achieved?
- Is adult returns information needed?

- Is independent peer review by the ISAB or another team needed before the 1999 study can proceed? If so, how can this be achieved prior to the start of the 1999 fish passage season?
- What is the point at which we can agree to revise the follow-on study in 2000 (i.e.: can we agree on flexibility based on the results from the 1999 study)?

NMFS' Gary Fredricks distributed a "strawman" proposal for the survival study at The Dalles for 1999-2000+. Fredricks said he had talked with Jim Nielsen after the state fisheries agencies discussed the study plan by conference call yesterday; he had also talked with Earl Dawley, and attempted to incorporate some of his concerns in the strawman. Fredricks' proposal included the following elements:

Overall near-term goal: determine the project operation that provides the highest juvenile salmonid survival given the current configuration of the project.

1999 Goal: evaluate juvenile survival and FPE for the BiOp spill operation and compare with an alternative spill operation. A secondary goal (within the primary goal) would be to evaluate two spill patterns.

Rationale: the previous model and survival work tells us that there may be a survival difference between spill percentages and patterns.

Method: design a highly precise test ($\pm 5\%$) that compares survival through two different spill levels within one year. Do **not** do sluiceway or powerhouse survival estimates. Use hydroacoustics and radio tags for FPE evaluations.

Rationale: Evaluating two spill operations in the same year is necessary because evaluating just one spill percentage a year will not provide a comparison of alternatives due to the assumption that you cannot compare survivals between years. Sluiceway survival cannot be assessed because a static condition is necessary for full predator response. Low turbine passage minimizes the need for a turbine survival estimate.

2000 Goal: Use the results of the previous three years of testing to evaluate the best spill level survival and sluiceway survival and project FPE under static operational conditions. A secondary goal could be to evaluate two different spill patterns.

Rationale: the best test of a point source outfall would be under a constant operational condition (preferably with normal or below-normal river flow) to allow full response by predators. Constant operation (constant forebay hydraulics) may have an effect on FPE as well.

Method: same precision as 1999 test. Release test groups through spillway and sluiceway under one spill percentage. Use hydroacoustics and radio tags for FPE evaluations.

Beyond 2000: Additional years of study under different river flows will be necessary to establish the reliability of the results before a management change can be made.

Long-term goal of obtaining the best survival will probably focus on changes to the existing structure. We will need to address the causal mechanism of mortality at each passage route to do this.

I don't know whether or not it is appropriate for me to put this on the table today, Fredricks said; I don't want the perception to be that NMFS is trying to guide this process too directly, but if people want to use this as a starting-point for the discussion, that would be fine.

Rock Peters observed that one of the issues associated with the spill test at The Dalles is the fact that there is still some confusion about the ultimate goal of the spillway survival evaluation. What I see is that we're focusing too intently on the details of this year's test, Peters said, and we're forgetting where we're really going with this whole thing. Part of what I would like to do today is open that back up and talk about what we really need, in terms of end products, from The Dalles spill test, he said. And that's one of the things I tried to address in the strawman, Fredricks said.

Perhaps it would be useful if we could get a sense of yesterday's discussion between the state fishery agencies on this topic, Silverberg suggested. To begin with, said Jim Nielsen, we think that, before any changes are made to the spill program at The Dalles, we need some solid information about the affects of the Biological Opinion spill program at that project. In 1999, the states believe we need to evaluate 64% spill in both the spring and the summer periods, Nielsen said. It also means that the confidence intervals need to be tightened up considerably – to at least $\pm 5\%$. I believe the states would be willing to look at using juveniles to do the evaluation, if we can be assured of achieving that level of precision, Nielsen said. The other thing Gary and I talked about was looking at sluiceway survival in addition to spillway survival in 1999, he continued; Gary was concerned about the accuracy of the hydroacoustic estimates.

As far as adult recoveries, from the states' perspective, if we are unable to achieve the $\pm 5\%$ precision level, then some adult recovery information will be needed to assess survival, Nielsen said. The bottom line is that 64% spring/summer spill, a precision level of $\pm 5\%$, and the question of what to do in 2000, are the most important issues, from our perspective, Nielsen said.

As far as what type of test to do in 2000, Nielsen continued, speaking strictly for Washington, if the results from the 1999 study are convincing, we might consider doing something different in terms of the spill program at The Dalles. However, until we've resolved what the situation is with the BiOp spill program, Washington is not prepared to support an alternative operation.

Earl Dawley commented that achieving a precision level of $\pm 5\%$ will require a number of test fish that is in the millions. That leaves us with one alternative: to assess juveniles, Dawley said. I think it would be possible to dramatically increase the number of target fish in the study, he said; for example, collections will be made at John Day, which will decrease the number of non-target fish that go through. I have always been reluctant to mark more than 100,000 fish in each of the groups because I've felt that it wasn't prudent to do so, said Dawley; in order to achieve sensitivities of 5%, that means we'll need to mark somewhere in the range of

35,000 fish per group. I also think it would be inappropriate to use anything other than river-run fish for this particular study, he added. Where we left it was a blanket endorsement of the +/- 5% sensitivity, with the understanding that we needed to discuss what was necessary to achieve that level of precision, Nielsen said.

Boyce asked that the group attempt to focus on the goal of the study in 1999. Fredricks stated for the record that it is not NMFS' intention to make a management change in 1999, or the year after that, or possibly even the year after that, based on this research. All we're talking about is the research period at The Dalles Dam; outside that period, he said, we will be operating the dam according to normal BiOp protocols. Also, he said, NMFS agrees with the need for greater precision in the 1999 test, although exactly how that will be achieved remains to be seen. NMFS also agrees with the need for an independent peer review of the study design; however, I don't see how that's going to happen prior to the 1999 migration season, Fredricks said.

Fredricks added that, in NMFS' view, there is a near-term goal and a long-term goal for the research program at The Dalles. The near-term goal, for at least 1999-2000, is to determine the project operation that provides the highest direct juvenile salmonid survival given the current configuration of the project. The long-term goal, at least in NMFS' view, is to obtain the best possible survival through the project through whatever structural changes may be needed; these changes will be identified through causal mechanism studies targeting the causes of mortality at The Dalles. Peters suggested that, if no overall project survival target is set, there is no way to know whether or not the relevant goals have been met; he suggested that the goals for this study include such a target.

After some minutes of additional discussion, Silverberg captured the near-term and long-term study goals discussed at today's meeting as follows:

**Goals for The Dalles Spill Study
Focus: Juvenile Coho and Chinook**

Near Term:

Determine, to the best degree possible:

- The operation that yields the greatest juvenile survival, given the existing project configuration
- Focus on chinook, fill in with coho

Long Term:

- Obtain the best possible project survival
- Will involve structural changes, identified through causal mechanism studies
- Set project survival targets

Is there agreement on these study goals? Silverberg asked. This question was not answered directly, but no specific disagreements were voiced in response to Silverberg's

question.

The group discussed the possibility of adding steelhead to the mix of stocks studied in 1999; Fredricks said it would probably be possible to use as many steelhead as chinook and coho in the test. It just means marking a lot of fish, he said – 70,000 coho/chinook and 70,000 steelhead to get the same precision. Another meeting participant raised the concern that using hatchery fish may bias the results of the study; it was agreed that using run-of-the-river fish may help alleviate some of that concern. The group also discussed the possible effects of the Rice Island tern relocation program on PIT-tag detections, ultimately concluding that there is no way to know, at this point, how effective that program will be and how much of an increase in detections may result in 1999.

Tom Poe went through some of the past research that may be relevant to the design of the 1999 study; Fredricks observed that most of this research was referenced in the white paper he prepared as background for the 1999 study design discussion.

Fredricks then suggested a 1999 study goal for the test at The Dalles, which he said was compatible with, but slightly different than, the short-term study goals he outlined above: to evaluate juvenile survival and fish passage efficiency through different routes of passage for the BiOp spill operation, and compare it to juvenile survival and FPE under an alternative spill operation. A secondary goal might be an evaluation of spill patterns, he said. The rationale behind this suggested study goal is that, based on the work that has been done in the past, there may be a survival difference between spill percentages, and possibly patterns. I'm not willing to throw out everything we've done in the past, Fredricks said, but I will concede that we don't know everything, and we're not going to focus on any one spill percentage at this time. NMFS feels that it would be prudent to look at two different spill levels in 1999.

I originally proposed a constant study condition for 1999, Fredricks said, but I'm stepping away from that now. We can't do that, he said, because I don't see how we can compare two different spill levels between two different years. The question we need to answer, first and foremost, is what spill level is best for fish. You can't answer that between years, he said; you have to answer it within a year. Also, in order to get the precision level people want, we can't test a bunch of different groups. My proposal for 1999 is to look only at spillway survival, over two study conditions, because I think that's the overarching question, Fredricks said. That will allow us to take the previous years' study results and, in 2000, and focus in on a single spill percentage.

Boyce said that, while Oregon is willing to support the near-term goals outlined above, Fredricks' description of NMFS' proposed 1999 test and goals is a definite departure from Oregon's idea of what the 1999 test should look like. We need to have a static condition over the entire test season in 1999, Boyce said, and that static spill level should be the current BiOp measure, 64%. That is the most important need for the 1999 test, from Oregon's perspective.

Do you think we can compare one year against another year? Fredricks asked. I think that, to get a good estimate of survival at a given project operation, a static spill level is needed across the entire season, Boyce replied. And what do you do with that estimate the next year, when you test something different? Fredricks asked. You would probably need at least two or

three repetitions at that static spill level, said Boyce. You're proposing that we test a constant 64% spill over the next three years? Fredricks asked. That's certainly an option, Boyce replied.

My concern is that, even if you re-test under the same spill percentage for a second or even a third year, that still isn't a valid comparison, Fredricks said – you won't know whether any difference in survival you may see is caused by something you've done, or because ambient passage conditions are different.

Fredricks added that, if the 1999 study can achieve the +/- 5% precision in the results that everyone would like to see, the study design he has proposed will provide a valid look at survival under BiOp spill conditions; it will yield similarly valid results for survival under 30% spill. If we can achieve that level of precision, he said, doesn't a within-year, 30%/64% spill test get us down the road a little faster than the study design the states are putting forward? I agree with that, said Boyce, but you have to look at the whole picture in terms of sluiceway survival in addition to spillway survival, and its effects on overall project survival. Just because you may see lower spillway survival at 64%, that doesn't mean overall project survival is automatically lower. I agree 100%, said Fredricks.

Boyce added that, in his opinion, alternating spill between 30% and 64% within the test season confounds the test results to a greater degree than attempting to compare the results from a static test condition between years. In addition, he said, by holding the spill level static over the entire test season, you would get a better sluiceway survival estimate in 1999, rather than having to wait until 2000 or beyond to get that information. In other words, I think there may be some economies, in terms of the amount of time it takes to generate a valid project survival estimate at The Dalles, if we adopt the approach the states are proposing, Boyce said.

COE contractor Cliff Pereira observed that there are problems with both proposed study approaches; neither really tell you what you'd like to know. The problem with NMFS' suggested 30%/64% approach is, it doesn't reflect the reality of what will happen once an "optimum" spill operation is identified and maintained over the entire migration season – the conditions fish will encounter, including predator distributions, may be different under a constant spill operation. The problem with the approach the states are proposing is that, if you focus on a single spill level for the entire season, how many years is it going to take before you're really confident that you've gotten the information you need? It could take decades before you've fully tested all of the spill conditions that might be beneficial to migrating fish.

So no matter which approach you choose, there are problems, Silverberg said; the question then becomes, which is the lesser of two evils? That's the conundrum, Fredricks agreed.

The discussion continued in this vein for some minutes, with numerous meeting participants arguing the merits and detriments of various aspects of both suggested study approaches. Ultimately, there was no change in the basic positions of the proposing agencies; NMFS continued to argue for a study that alternates 30% and 64% spill within the study season, and the states and tribes continued to propose that a static spill level of 64% be maintained over the entire study period. In addition, the state and tribal agencies felt that an evaluation of

sluiceway survival should be a critical element of the 1999 study, while NMFS felt that, logistically, it would be difficult or impossible to achieve valid results from simultaneous spillway and sluiceway survival evaluations in 1999.

Ultimately, it was agreed that it was impossible to achieve consensus on The Dalles study design issue at today's meeting; therefore, this issue will need to be framed for resolution at the March 4 IT meeting. Gary Fredricks, Ron Boyce, Bob Heinith and Jim Nielsen agreed to frame the issue for the IT.

The group also briefly discussed the 1999 spill test program at John Day Dam; there was general agreement that it will not be possible to develop the 1999 study plan for this project until the limits to spill imposed by BPA's minimum generation requirements are known. It was also agreed that a separate, focused discussion on the John Day test is needed, and that this discussion will take place at the next Portland FFDRWG meeting, scheduled for Monday, March 1.

With that, the meeting was adjourned. Meeting notes prepared by Jeff Kuechle, BPA contractor.